NORTHROP GRUMMAN

DEFINING THE FUTURE

FROM UNDERSEA TO OUTER SPACE TO CYBERSPACE
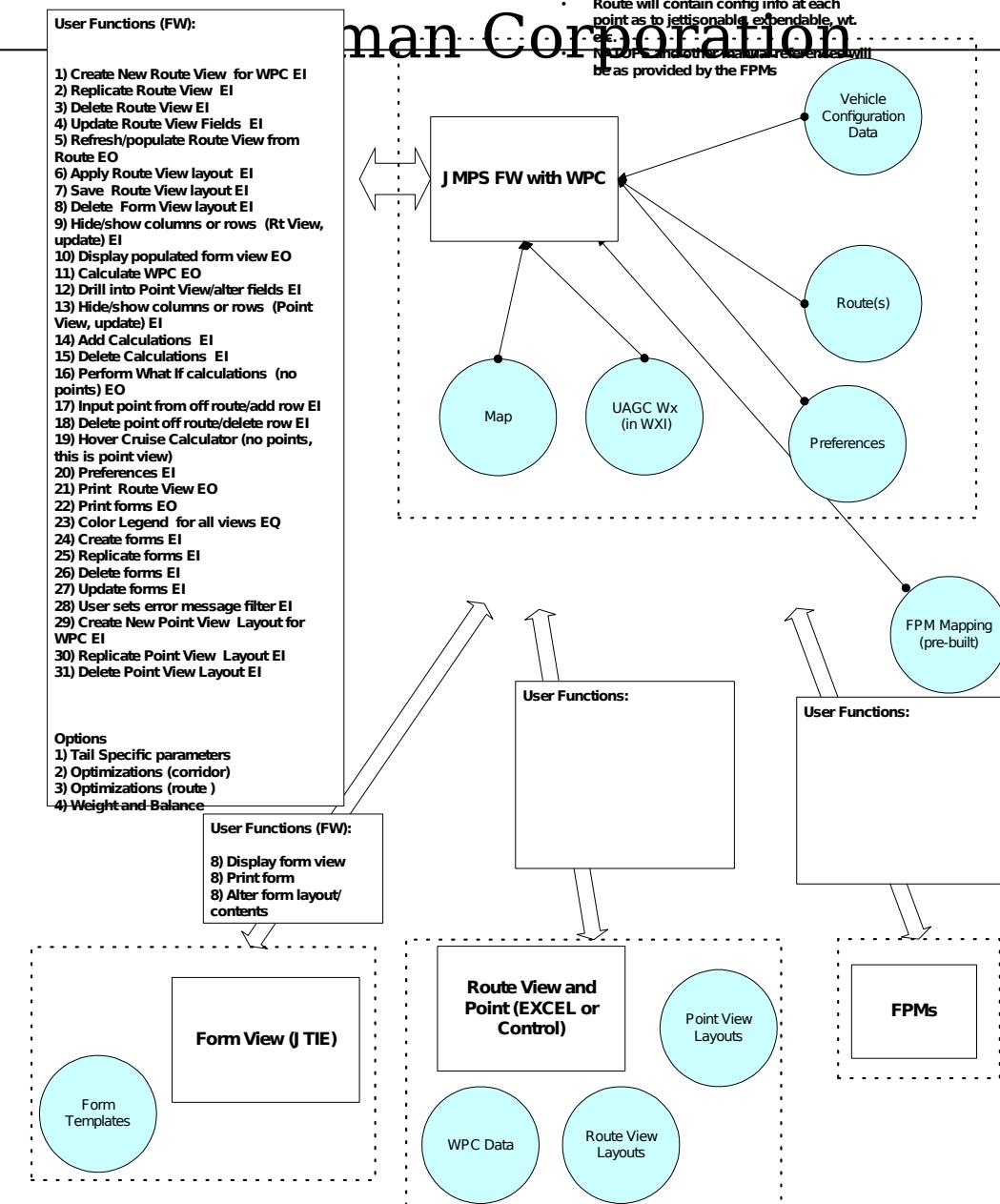
Weight & Power Requirements Analysis

12 October 2004

Northrop Grumman Corporation

SOW Paragraph

4.3.1.1 Helicopter Weight and Power Calculator (SOW)

The contractor shall provide the capability to conduct route specific helicopter weight and power calculations and to produce required Weight and Power Forms in accordance with Army Aircrew Training and NATOPS manuals. In addition, performance calculations may be conducted for departure, cruise, destination and hover points. The UPC provides the capability to conduct 'what if' calculations using the specific aircraft and ambient conditions for any designated point along the route. This requirement is not currently supported by the JMPS tabular view.

Boundary Diagram – Weight And Power Calculator

White Paper Function Point Analysis

- Assume Configuration Editor is sufficient
- Route will contain config info at each point as to jettisonable, expendable, wt.
- NJDOPS and other calc's references will be as provided by the FPMs

User Functions (FW):

1) Create New Route View for WPC EI
2) Replicate Route View EI
3) Delete Route View EI
4) Update Route View Fields EI
5) Refresh/populate Route View from Route EO
6) Apply Route View layout EI
7) Save Route View layout EI
8) Delete Form View layout EI
9) Hide/show columns or rows (Rt View, update) EI
10) Display populated form view EO
11) Calculate WPC EO
12) Drill into Point View/alter fields EI
13) Hide/show columns or rows (Point View, update) EI
14) Add Calculations EI
15) Delete Calculations EI
16) Perform What If calculations (no points) EO
17) Input point from off route/add row EI
18) Delete point off route/delete row EI
19) Hover Cruise Calculator (no points, this is point view)
20) Preferences EI
21) Print Route View EO
22) Print forms EO
23) Color Legend for all views EQ
24) Create forms EI
25) Replicate forms EI
26) Delete forms EI
27) Update forms EI
28) User sets error message filter EI
29) Create New Point View Layout for WPC EI
30) Replicate Point View Layout EI
31) Delete Point View Layout EI

Options
1) Tail Specific parameters
2) Optimizations (corridor)
3) Optimizations (route)
4) Weight and Balance

JMPS FW with WPC

Vehicle Configuration Data

Route(s)

Map

UAGC Wx (in WXI)

Preferences

FPM Mapping (pre-built)

User Functions:

User Functions:

User Functions (FW):

8) Display form view
8) Print form
8) Alter form layout/ contents

Form View (JTIE)

Form Templates

Route View and Point (EXCEL or Control)

Point View Layouts

FPMs

WPC Data

Route View Layouts

Contract Tasking (Original)

WPC Data Store

Preferences (data store)

Color Legend for all views

Refresh/populate Route View from Route

Display populated form view

Calculate WPC

Perform What If calculations (no points)

Print forms

Delete Form View layout

Add Calculations

Delete Calculations

Hover Cruise Calculator (no points, this is point view)

Preferences (Set for WPC)

Input point from off route/add row

Access Vehicle Configuration Data

Access FPM Mapping (pre-built)

Drill into Point View/alter fields

Additional Requirements in White Paper (Original)

- **Additional requirements estimated at 93 FPs (all threshold requirements) with following transactions**

Route View
Route View Layouts

Refresh/populate Route View from Route

Print Route View

Create New Route View for WPC

Replicate Route View

Delete Route View

Update Route View Fields

Apply Route View layout

Save Route View layout

Point View
Delete point off route/delete row

Hide/show columns or rows (Route View, update)

Hide/show columns or rows (Point View, update)

Create New Point View Layout for WPC

Replicate Point View Layout

Delete Point View Layout

Form View
Form Templates

Create forms

Replicate forms

Delete forms

Update forms

User Features
Input point from off route/add row

User sets error message filter

Point View Layouts

Estimated additional FN points : 93

Contract Tasking (Navy Threshold, 10/7/04)-Highlight in Blue

WPC Data Store

Preferences (data store)

Color Legend for all views

Refresh/populate Route View (Form View, instead) from Route

Display populated form view

Calculate WPC

Perform What If calculations (no points)

Print forms

Delete Form View layout

Add Calculations

Delete Calculations

Hover Cruise Calculator (no points, this is point view)

Preferences (Set for WPC)

Input point from off route/add row (manual entry)

Access Vehicle Configuration Data

Access FPM Mapping (pre-built)

Drill into Point View/alter fields

Additional Requirements in White Paper (Solicits Input - due 10/7/04) - Highlight in Blue

Route View
- Route View Layouts
- Refresh/populate Route View from Route
- Print Route View
- Create New Route View for WPC
- Replicate Route View
- Delete Route View
- Update Route View Fields
- Apply Route View layout
- Save Route View layout

Form View
- Form Templates
- Create forms
- Replicate forms
- Delete forms
- Update forms

Point View
- Delete point off route/delete row
- Hide/show columns or rows (Route View, update)
- Hide/show columns or rows (Point View, update)
- Create New Point View Layout for WPC
- Replicate Point View Layout
- Delete Point View Layout

User Features
- Input point from off route/add row
- User sets error message filter
- Point View Layouts

Estimated additional FN points : 27

Contract Tasking (NGMS Aight High light) Green

WPC Data Store

Preferences (data store)

Color Legend for all views

Refresh/populate Route View from Route

Display populated form view

Calculate WPC

Perform What If calculations (no points)

Print forms (Thru JTIE)

Delete Form View layout

Add Calculations

Delete Calculations

Hover Cruise Calculator (no points, this is point view)

Preferences (Set for WPC)

Input point from off route/add row

Access Vehicle Configuration Data

Access FPM Mapping (pre-built)

Drill into Point View/alter fields

Additional Requirements in White Paper (NGMS Approach, 10/12/04)

DEFINING THE FUTURE

NORTHROP GRUMMAN

Route View

Simplified Route View will be provided. See proposed UI

- Route View Layouts
- Refresh/populate Route View from Route
- Print Route View
- Create New Route View for WPC
- Replicate Route View
- Delete Route View
- Update Route View Fields
- Apply Route View layout
- Save Route View layout

Form View

- Form Templates (Thru JTIE)
- Create forms (Thru JTIE)
- Replicate forms (Thru JTIE)
- Delete forms (Thru JTIE)
- Update forms (Thru JTIE)

Assume that JTIE capability is "good enough" *

Point View

- Delete point off route/delete row
- Hide/show columns or rows (Route View, update)
- Hide/show columns or rows (Point View, update)
- Create New Point View Layout for WPC
- Replicate Point View Layout
- Delete Point View Layout

User Features

- Input point from off route/add row
- User sets error message filter
- Point View Layouts

Point View Layouts should be allocated to Point View. Display in this location is for comparison purpose.

NG estimated additional FN points :

Rationale and Benefit of NG 10/12 Approach

- **Enable partial route view capability to give the user the capability to quickly designate the modes (Cruise, Hover etc.) at each point along the route for what-if options and designate points for required form calculation and printout. Trade off form view to provide current JTIE capability vs explicit Form functions within JMPS**
  - **The capabilities provided by Form View can be handled by Point View in terms of user input and what-if, leaving the print capability handled by JTIE**
- **Trade off current contract requirements 1) Drill into Point View/Alter Fields, 2) Printing**
  - **Not gaining much from them because 1) not on Navy Threshold and 2) Printing can be handled by JTIE**
- **Final solution provides the capability to**
  - **Point View containing all relevant platform-specific parameters**
  - **Basic Route View without the ability for the user to customize. Contains all individual commands at a point.**
  - **What-if capabilities at a point**
- **Future efforts can be added on to incorporate**
  - **More elaborate, customizable Route View**
  - **More elaborate What-if**

Additional Points

- **The objective requirements have not been estimated (identified in MAJ Sheyda document)**